Modernizing the Army's Brigade Combat Teams Increment 1 Capabilities






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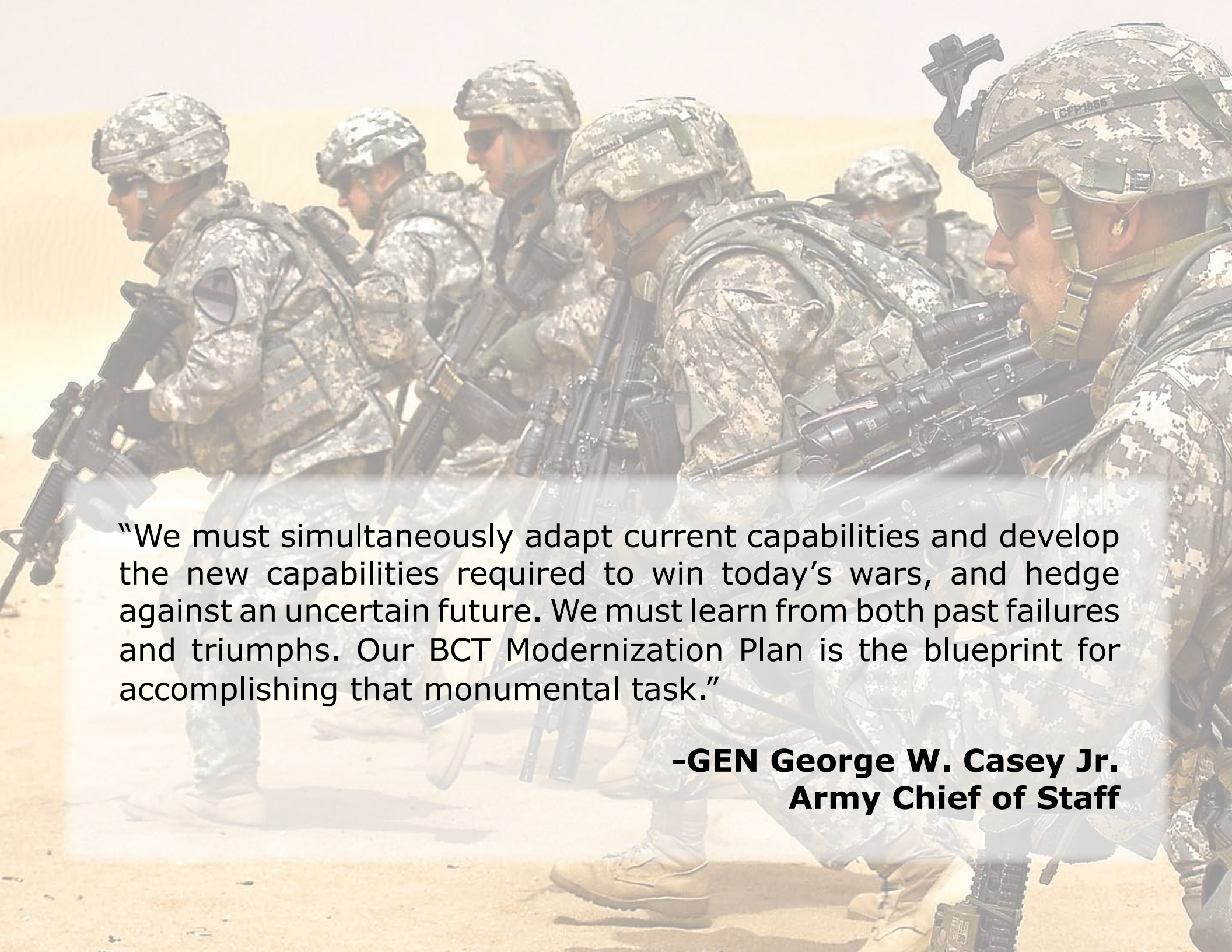

"We must simultaneously adapt current capabilities and develop the new capabilities required to win today's wars, and hedge against an uncertain future. We must learn from both past failures and triumphs. Our BCT Modernization Plan is the blueprint for accomplishing that monumental task."

-GEN George W. Casey Jr.
Army Chief of Staff

"The sensors and systems we are currently testing are going to be saving Soldiers' lives in the near future. I believe that these sensors and these unmanned ground vehicles and micro air vehicles will definitely enhance the capabilities and situational awareness they will have in the current force."

-SFC Joseph Hardy
Scout Platoon SGT, 2nd Combined Arms Battalion
5th Brigade, 1st Armor Division

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Introduction

The Army is working to build a versatile mix of tailorable and networked organizations, operating on a rotational cycle, to provide a sustained flow of trained and ready forces for full-spectrum operations and to hedge against unexpected contingencies at a sustainable tempo for our all-volunteer force. We seek to speed the incremental fielding of the best technology available from our research and development base to meet the challenges of the current fight, while leveraging the continually evolving combat environment and knowledge learned during eight years of war to develop future capabilities.

Upgrade and Modernize Selected Systems to Best Prepare Soldiers for Combat

The Army's objective is to ensure that every Soldier, whether in theater or in garrison, receives the proper training and equipment needed to accomplish their full spectrum of missions. We will reset and upgrade vehicles capable of accepting new capabilities in appropriate numbers, and divest ourselves of platforms whose size, weight and power constraints limit their ability to accept new capabilities at reasonable costs.

Incorporate New Technologies into our Brigade Combat Teams (BCT)

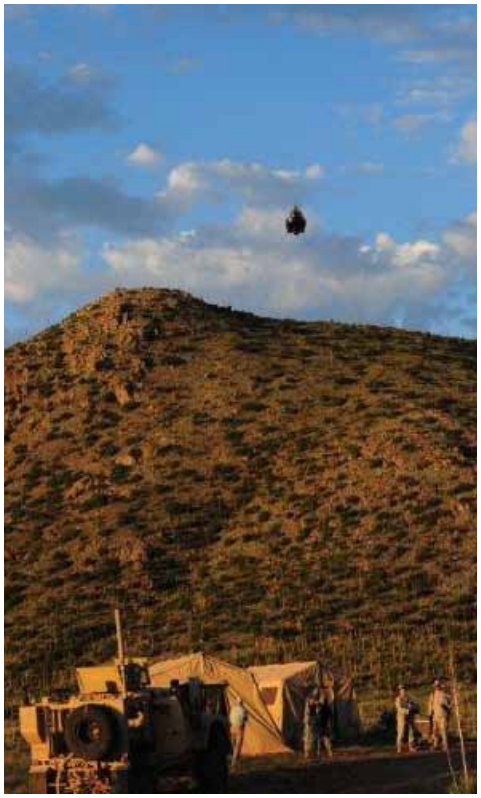
We have developed a BCT Modernization Plan to incrementally field integrated Capability Packages to all BCTs. Incremental Capability Packages, developed and fielded in synchronization with the Army Force Generation (ARFORGEN) model, provide sustainable forces fully integrated across Doctrine, Organization, Training, Material, Leadership, Education, Personnel, and Facilities (DOTMLPF) and allow the Army to field capabilities required to stay ahead of the demands of the security environment and the needs of our Warfighters.

Better Enable all of our Formations through Continuous Upgrades and Modernization

Capability integration recognizes that fielding a materiel solution is only part of the effort to adapt and modernize the force. Incremental Capability Packages, developed and fielded on a two-year cycle, will be composed of vehicles, equipment, network elements and supporting infrastructure to fill the highest priority shortfalls and mitigate risk for Soldiers. The incremental deliveries will build upon one another as the Army continually adapts and modernizes.

Army Evaluation Task Force (AETF)

The AETF at Fort Bliss, Texas, continues to perform its enduring mission to provide valuable feedback during the evaluation of future capabilities and to develop new Tactics, Techniques and Procedures (TTP). Soldiers of the AETF are currently evaluating Increment 1 capabilities. As the operational environment evolves and new capabilities are available, the AETF will evaluate and prioritize future Capability Packages with hands-on assessments by combat veterans in realistic operational settings.



Capability Packages

Capability Packages provide the Army a regular process to strengthen our units with the latest materiel and non-materiel solutions to the evolving challenges of the operating environment. This allows the Army to get the capabilities in highest demand to the Soldiers that need them, when they need them most. Increment 1 forms the backbone of the first Capability Package, which also contains Advanced Precision Mortar, Nett Warrior, and Human Terrain Teams.

By fielding capabilities in alignment with the way Brigade Combat Teams (BCT) are structured and trained, the Army is ensuring that our Soldiers have the right capabilities to fight effectively as a system in the environments they are facing.

Capability Packages are a key element of the Army's transition to a BCT Modernization Strategy to build a versatile mix of mobile, networked and combat effective BCTs. Accelerating proven solutions, these packages will upgrade our units every few years. The bundles of capabilities include doctrine, organization and training in conjunction with materiel to fill the highest priority shortfalls and mitigate risk for Soldiers. The incremental deliveries will build upon one another as the Army continually adapts and modernizes.

Overview Of E-IBCT Increment 1 Capabilities

Increment 1, a key part of the first capability package, significantly improves the Soldier's knowledge of the battlefield and the ability to communicate key situational awareness data across the Brigade Combat Team (BCT) echelon by providing enhanced Warfighter capabilities in two primary areas. First, it provides enhanced situational awareness, force protection and lethality through the use of unattended and attended sensors and munitions. Second, it provides a communications network backbone for Battalion Command Networks (BCNs).

The current modernization strategy will deliver Increment 1 capability to nine Infantry BCTs starting in 2011. Remaining BCTs will receive incremental releases of upgraded capabilities. Army Force Generation (ARFORGEN) will determine if and when Increment 1 BCTs will be upgraded to a post Increment 1 configuration based upon warfighting requirements.

Numerous Operational Needs Statements (ONS) from theater reflect IBCTs requirements for additional robotic capability for air and ground, more responsive precision fires at lower levels, and better Situational Awareness (SA) and Situational Understanding (SU) of friendly and enemy locations in complex terrain, like urban environments. IBCTs are the most often deployed and most vulnerable formations, thereby warranting the increased demand in lower level unit Intelligence, Surveillance and Reconnaissance (ISR). Increment 1 provides the Army the opportunity to field high-demand, technologically advanced capabilities to operational forces that address many of the needs discussed above.

The E-IBCT package will consist of the following systems: Urban and Tactical Unattended Ground Sensors (U/T-UGS), Class 1 (Block 0) Unmanned Aerial System (UAS) and the Small Unmanned Ground Vehicle (SUGV) Block 1. The IBCT systems will be fully integrated and networked through a Network Integration Kit (NIK) enabling data sharing and the Command and Control (C2) of systems. All systems are currently under evaluation and testing by the Soldiers of the AETF.





The Soldier

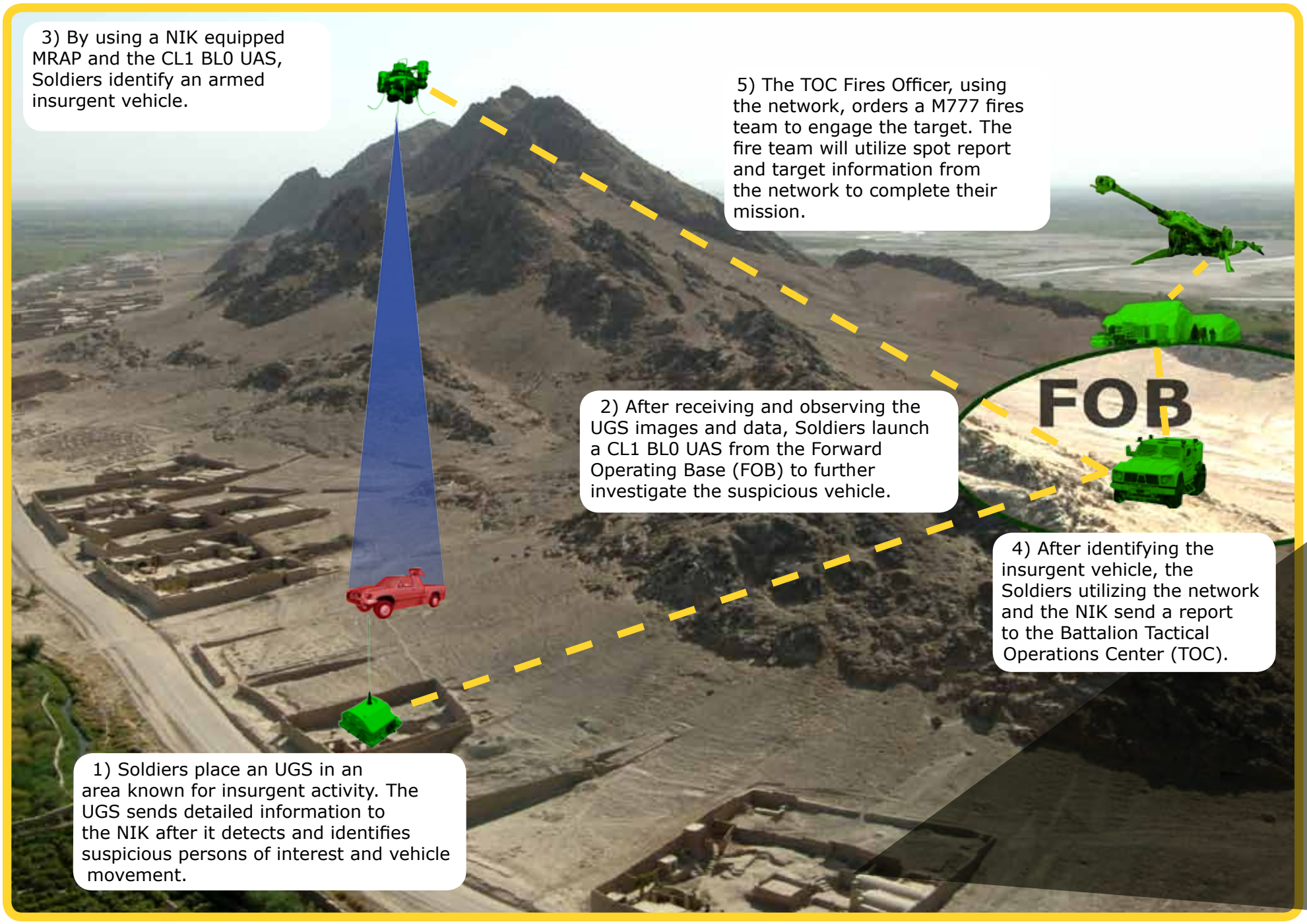
Using the network, the Brigade Combat Team (BCT) Soldier will be connected to other Soldiers through manned and unmanned systems, enabling them to access information at the right place and time to achieve a decisive advantage over any enemy. This connectivity provides the Soldier increased Intelligence, Surveillance and Reconnaissance (ISR) capability, enabling effective performance of Battle Command functions while maximizing Soldier and force lethality and survivability.

Network connectivity also enables the Soldier to more effectively employ and control unmanned ground and aerial systems. When mounted, Soldiers execute the network-enabled capabilities via Network Integration Kits (NIK), and as part of the follow-on capabilities effort when dismounted via the Common Controller (CC) and a Manpackable Network Integration Kit (M-NIK).

Using the network - a layered system of interconnected computers and software, radios and sensors - Soldiers will be able to connect to the proper sensor data and communication relays to ensure proper battlespace situational awareness. Commanders will be able to fuse data more efficiently, enabling a more accurate understanding of the battlefield and better collaboration to enhance decision making.

In order to connect the Soldier to Battle Command and to increase battlefield awareness, IBCT Soldier-leaders will be provided Nett Warrior, managed by Program Executive Office Soldier. The Nett Warrior graphically displays the individual Soldier location on a digital geo-referenced image. Additional Soldier locations will be graphically displayed on the digital medium through the Army Battle Command System (ABCS), connected through the Rifleman's Radio system, to send and receive information and connect the dismounted Soldier to the network. These radios will also connect the Soldier to higher echelon data and information products to assist in decision making and situational understanding. All of this will be integrated on a user-defined graphical interface, allowing the Soldier to easily see, understand and interact in the method that best suits the user and the particular mission.

Army E-IBCT Increment 1 Modernization Capabilities



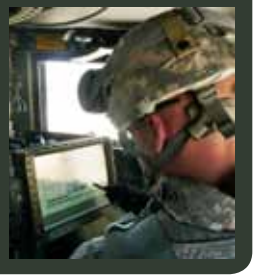
Army E-IBCT Increment 1 Modernization Capabilities

XM156 Class 1 Block 0 Unmanned Aerial System (CL1 BL0 UAS)

The CL1 BL0 UAS provides squad or platoon sized elements with Reconnaissance, Surveillance and Target Acquisition (RSTA) in areas suited for smaller units. It uses autonomous flight and network connectivity to interact with the Soldier and provide dedicated RSTA and early warning while maintaining constant surveillance.

Network Integration Kit (NIK)

The NIK provides initial network connectivity to transfer sensor and communication data to and from existing tactical wheeled vehicles. The NIK consists of an Integrated Computer System (ICS) hosting the latest communications and radio systems, limited Battle Command and Systems of Systems Common Operating Environment (SOSCOE) software. It is integrated onto the MRAP and HMMWV platforms.



AN/GSR-9/10 Tactical/Urban Unattended Ground Sensors (T/U-UGS)

The UGS provide the Soldiers of the BCT with increased situational awareness and early warning. Tactical and Urban UGS (T/U-UGS) can be deployed by the Soldier or by robotic vehicle. Multi-mode sensors identify targets, and report location, classification and images via the network.

XM1216 Small Unmanned Ground Vehicle (SUGV)

The SUGV is a lightweight, man-portable Unmanned Ground Vehicle (UGV) capable of conducting operations in urban terrain, tunnels, sewers and caves. The SUGV performs hazardous missions without directly exposing the Soldier to the dangers found in manpower intensive or high-risk missions.

SUGV IN ACTION

Soldiers on a mission to clear known-insurgent strongholds use the SUGV to locate insurgents inside a building and alert the Soldiers before they enter. The SUGV is a vital tool for Brigade Combat Teams. It greatly enhances the Soldier's Situational Awareness and lowers the risk for casualties by alerting them of dangers without directly exposing them to the hazard.

The Army's Brigade Combat Team Modernization (BCTM) strategy will build a versatile mix of mobile, networked BCTs that can leverage mobility, protection, information and precision fires to conduct effective operations across the spectrum of conflict. Key to modernizing the Army's BCTs are Capability Packages, designed to significantly improve the Soldier's knowledge of the battlefield and the ability to communicate key situational awareness data across the BCT echelon. Soldiers of the BCTs will receive incremental deliveries of these packages, which include doctrine, organization and training in conjunction with materiel to fill the highest priority shortfalls and mitigate risk for Soldiers.

The Ground Tactical Network

The Army will continue development and fielding of an incremental ground tactical network capability to all Army Brigade Combat Teams (BCTs). The network is a layered system of interconnected computers and software, radios and sensors within the BCT. The network is essential to enable Unified Battle Command (UBC) and will be delivered to the Army's BCTs in increasing capability increments. The first increment is currently in operational testing and will be delivered to Infantry BCTs in the form of Network Integration Kits (NIK).

Soldiers, from brigade to squad, will be connected to the proper sensor data and communication relays to ensure proper battlespace situational awareness.

Soldiers, systems and sensors collect data

Data is forwarded to the platoon/ company level units for evaluation

Battalion level TOC receives information and adjusts missions accordingly

The Network Integration Kit (NIK)

The NIK is a suite of network equipment, currently integrated on MRAP and HMMWV platforms, that provides the network connectivity and Battle Command software to integrate and fuse sensor data into the Common Operational Picture (COP) displayed on the Future XXI Battle Command Battalion/Brigade and Below (FBCB2). The NIK consists of an Integrated Computer System (ICS) that hosts the Battle Command software and the Systems of Systems Common Operating Environment (SOSCOE) software, along with a Joint Tactical Radio System Ground Mobile Radio (JTRS GMR) to provide the interface to the sensors and unmanned systems, as well as voice and data communications with other vehicles and Soldiers.

Soldiers will be able to communicate with the Battalion Tactical Operations Center (TOC) by sending reports on enemy sightings, activity and location utilizing the NIK, allowing for near real-time tactical decisions.

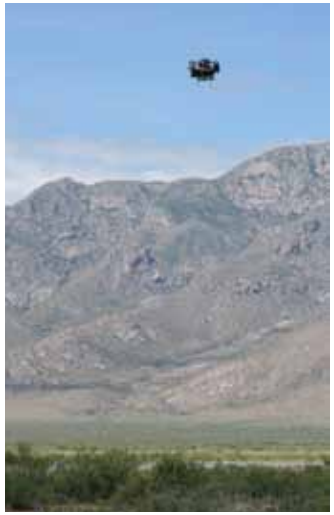
XM156 Class I Block 0 Unmanned Aerial System (UAS)

The XM156 Class I Block 0 Unmanned Aerial System (UAS) is a platoon level asset that provides the dismounted Soldier with Reconnaissance, Surveillance and Target Acquisition (RSTA). Total system weight, which includes the air vehicle, a control device and ground support equipment, is less than 51 pounds and is back-packable in two custom Modular Light-Weight Load-Carrying Equipment (MOLLE)-type carriers.

The Class I UAS provides imagery data in order to recognize personnel and provide targeting information to the BCT network during day and night operations and in adverse weather conditions from as high as 1,000 feet above ground level. The Class I threshold UAS capability will consist of a 25-pound vehicle with a Commercial off the Shelf (COTS) Electro Optical (EO) sensor, a COTS Infra-Red (IR) sensor and a gasoline-based propulsion system.

The air vehicle operates in open, rolling, complex and urban terrains with a vertical take-off and landing capability. It is interoperable with select ground and air platforms and controlled by mounted or dismounted Soldiers. The Class I uses autonomous flight and navigation, but it will interact with the network and Soldier to dynamically update routes and target information. It provides dedicated reconnaissance support and early warning to the lowest echelons of the BCT in environments not suited to larger assets.

The Class I system provides a hover and stare capability that is not currently available in the Army UAV inventory for urban and route surveillance. The Class I system also fills known gaps that exist in force operations such as Soldier protection in Counterinsurgency (COIN) operations and environments, and the ability to conduct joint urban operations.



XM1216 Small Unmanned Ground Vehicle (SUGV)

The XM1216 Small Unmanned Ground Vehicle (SUGV) is a lightweight, Soldier portable Unmanned Ground Vehicle (UGV) capable of conducting military operations in urban terrain, tunnels, sewers and caves. The SUGV provides an unmanned capability for those missions that are manpower intensive or high-risk, such as urban Intelligence, Surveillance and Reconnaissance (ISR) missions and Chemical/Toxic Industrial Chemicals (TIC), and Toxic Industrial Materials (TIM) reconnaissance missions without exposing Soldiers directly to the hazards.

The SUGV's modular design allows multiple payloads to be integrated in a plug-and-play fashion that will minimize the Soldier's exposure to hazards. Payloads to be fielded are the manipulator arm, tether capability, chemical/radiation detection and a laser target designator. Weighing 32 pounds, the SUGV is capable of carrying up to four pounds of payload weight. The SUGV Increment 1 capability will feature an enhanced SUGV chassis with an integrated Commercial off the Shelf (COTS) sensor head and radio.

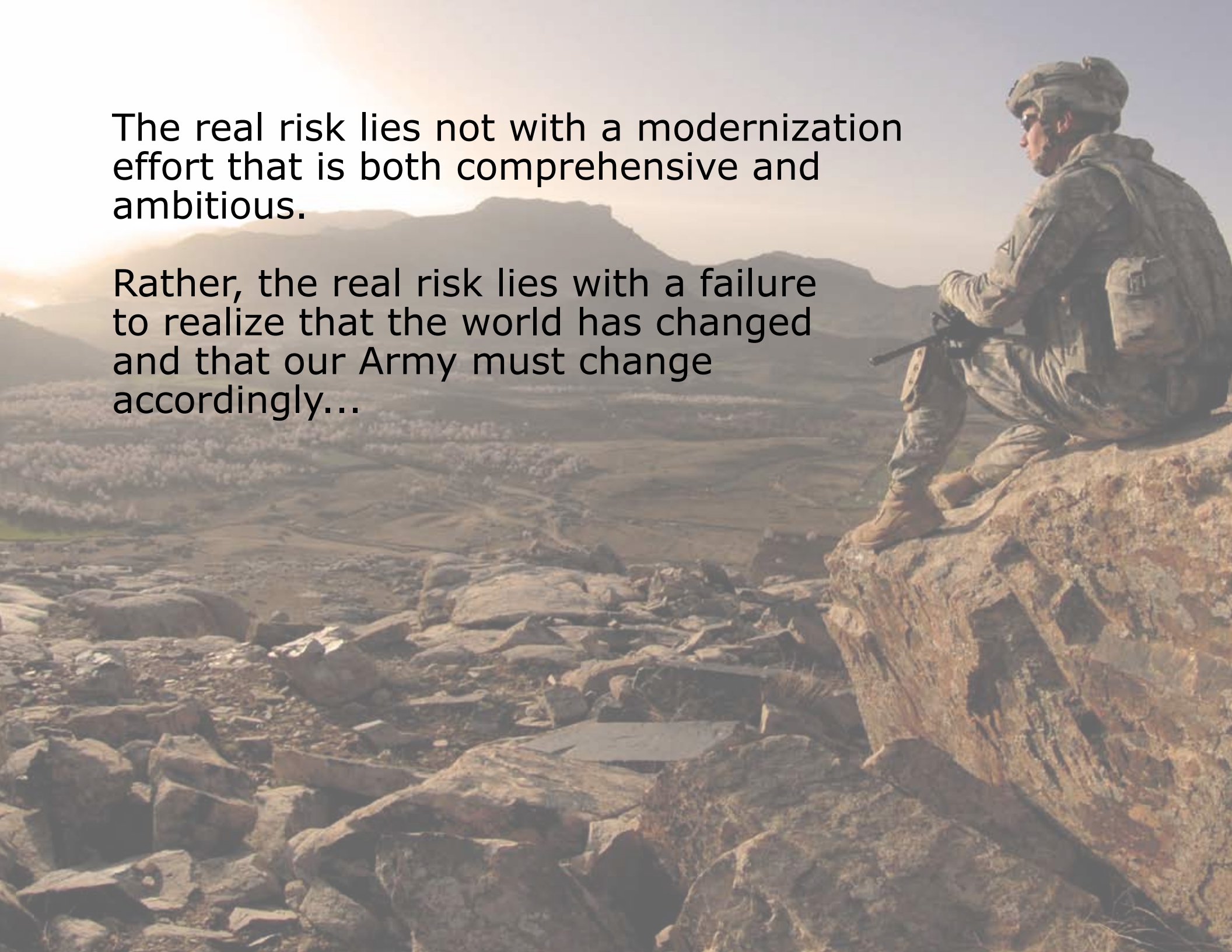
AN/GSR-9/10 Tactical/Urban Unattended Ground Sensors (T/U-UGS)

The Unattended Ground Sensors (UGS) are divided into two major subgroups of sensing systems: AN/GSR-9 (V) 1 Tactical-UGS (T-UGS), which includes Intelligence, Surveillance and Reconnaissance (ISR) - UGS and Radiological & Nuclear UGS; and AN/GSR-10 (V) 1 Urban-UGS (U-UGS).

The UGS are used to perform mission tasks such as perimeter defense, surveillance, target acquisition and situational awareness, including radiological, nuclear, and early warning. An UGS field includes multi-mode sensors for target detection, location and classification, and an imaging capability for target identification. The sensor field also includes a gateway node to provide sensor fusion and a long-haul interoperable communications capability for transmitting target or Situational Awareness information to a remote operator, or the Common Operational Picture (COP) through the Joint Tactical Radio System (JTRS) Network.

The U-UGS provide a network-enabled reporting system for Situational Awareness and force protection in urban settings. U-UGS also enable residual protection for cleared areas of Urban Military Operations in Urban Terrain (MOUT) environments. They are hand-employed by Soldiers or robotic vehicles either inside or outside buildings and structures.

U-UGS support Brigade Combat Team (BCT) operations by monitoring urban choke points such as corridors and stairwells, as well as sewers, culverts and tunnels. U-UGS gateways provide the urban situational awareness data interfaced to JTRS networks. Soldiers involved in the recent testing of the UGS provided invaluable feedback which was incorporated into new versions (form factors) currently in testing.



The real risk lies not with a modernization effort that is both comprehensive and ambitious.

Rather, the real risk lies with a failure to realize that the world has changed and that our Army must change accordingly...

For additional information about the program please visit our website:
http://www.bctmod.army.mil